

ABSTRACT

Method for removing mercury emissions from the burning of coal or other carbonaceous fuels, such as in a power plant or from coal gasification. Alkali additives are introduced in the coal gasification and staged coal combustion processes to capture the mercury in an alkaline molten slag. The combustor is operated at a stoichiometric air or oxygen to fuel ratio of about 0.40 to 0.80 and a temperature range of about 2200° - 3000°F. During the staged combustion process the molten slag containing combinations of alkali and mercury is removed and disposed of to minimize or prevent mercury from escaping in the flue gas.